

Application No. 09/728,193 (09792909-4714)
Reply to Final Office Action of May 31, 2006

REMARKS

Claims 1, 2, 4-6, 8-20, 23-25, 27, and 28 remain pending in the above-identified application.

Rejection under 35 U.S.C. § 103(a)

Applicant respectfully requests reconsideration of the rejection of claims 1, 2, 4-6, 8-20, 23-25, 27, and 28 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,194,440 (Tsuda) in view of U.S. Patent No. 5,418,799 (Tada).

As an initial matter, the Office Action states that an unknown reference, referred to as "Hayashi et al", discloses features of the claims and relies on that reference in the obviousness statement of the rejection. However, the reference is not identified in detail in the preamble of the rejection, on the notice of references cited, or anywhere else in the Office Action and a copy of the reference was not supplied to Applicant with the Office Action. Further, the reference does not seem to appear elsewhere in the prosecution history. Because Applicant does not know what particular patent or non-patent reference the Examiner is referring to as "Hayashi et al", Applicant is not being given a fair opportunity to reply. According to Section 706.02(j) of the M.P.E.P., "It is important for an examiner to properly communicate the basis for a rejection so that...applicant can be given fair opportunity to reply." If the Examiner wishes to maintain the rejection, Applicant requests the Examiner do so in a new Office Action clearly presenting the bases for rejection so that Applicant has a fair opportunity to reply.

The rejection is improper for other reasons as described below. Accordingly, Applicant requests that any rejection put forth in the non-final Office Action requested above corrects the insufficiencies described below.

Claims 1, 2, 4-6, and 11-20

Each of claims 1, 2, 4-6, and 11-20 recites a method of manufacturing a crystal of a III-V compound of a nitride system comprising forming a first III-V nitride pattern in one position in the crystal in a direction of a thickness of the crystal, the first pattern including a plurality of first elements distributed in a lateral direction with respect to the

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crystal at a pitch, each of the first elements forming an elongate stripe extending in a longitudinal direction that is substantially orthogonal to the lateral direction and each of the first elements having at least one width measured in the lateral direction, and forming a second III-V nitride pattern in another position in the crystal in the direction of the thickness of the crystal, the second pattern including a plurality of second elements distributed in the lateral direction with respect to the crystal at a pitch, each of the second elements forming an elongate stripe extending in the longitudinal direction and each of the second elements having at least one width measured in the lateral direction, wherein the pitch of the first pattern and the pitch of the second pattern are different and the second pattern partly overlies and partly does not overlie the first pattern in the direction of the thickness of the crystal due at least in part to the different pitches of the first pattern and the second pattern.

Tsuda discloses a method for making a semiconductor including forming a first mask 102 and forming a second mask 104 above the first mask. Tada discloses a laser device including a plurality of electrodes 6a and a plurality of grooves 5. Tsuda and Tada, individually and in combination, fail to show or suggest forming a plurality of first elements distributed in a lateral direction with respect to the crystal at a pitch, and forming a plurality of second elements distributed in the lateral direction with respect to the crystal at a pitch, wherein the pitch of the first pattern and the pitch of the second pattern are different and the second pattern partly overlies and partly does not overlie the first pattern in the direction of the thickness of the crystal due at least in part to the different pitches of the first pattern and the second pattern.

The manner in which the Examiner believes the cited references suggest the present invention is unclear. As mentioned above, the Office Action states that an unknown reference, referred to as "Hayashi et al", discloses a second nitride pattern having a different pitch than that of a first nitride pattern and partly overlying the first pattern and partly not overlying the first pattern due at least in part to the different pitches. However, Applicant does not know what particular patent or non-patent reference the Examiner is referring to. Thus, Applicant is not being given a fair opportunity to reply as required by Section 706.02(j) of the M.P.E.P.

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Further confusing the application of the unknown reference (Hayashi et al), in the obviousness statement of the rejection the Office Action states that Tada discloses a plurality of laser devices and that it would have been obvious to combine the pitch difference disclosed in the unknown reference (Hayashi) with the plurality of laser devices to teach the present invention. It is not clear why Tsuda is not mentioned in the obviousness statement despite it being the foundation of the Section 103 obviousness rejection according to the preamble of the rejection, which identifies Tsuda in view of Tada. Further, although the Office Action refers to multiple laser devices of Tada, Tada appears to refer to a single laser device, namely the laser device shown in Figs. 1, 2c, 3f, 4b, and 5a of Tada. Thus, again, the Office Action is ambiguous and Applicant is not being given a fair opportunity to reply.

In addition, the Office Action, after the obviousness statement, concludes its treatment of claim 1 by stating that "the pattern of the III-V laser device layer 107 between adjacent laser devices ('440 Fig 6 and '799 Fig 1) and the pitch of the gallium nitride 103 between the SiO₂ strips 102 is clearly different, which is expected to cause the second pattern to partly overlap and partly not overlap the first pattern." Page 4, lines 8-11. This statement is unclear and inaccurate, however it is construed. It appears that by "laser device layer 107 between adjacent laser devices", the Office Action is referring to the cladding layer 107 shown in Fig. 6 of Tsuda ('440) and the laser device of Tada ('799). However, it is not clear what the Office Action considers the "pattern" of the cladding layer 107 of Tsuda "between" the "adjacent" laser device of Tada. For example, it is not clear how the cladding layer 107 of Tsuda is "between" the single laser device of Tada. Tada does not show adjacent laser devices as the Office Action states, but rather a single laser device as shown in Fig. 1. Perhaps the Office Action intends to refer to the plural laser device elements 6a when it refers to "laser devices". Even if that is the case, it is not clear what the Office Action is considering the "pattern" between the cladding layer 107 of Tsuda "between" the laser device elements 6a of Tada.

Further, it is confusing how some pattern of the cladding layer 107 of Tsuda "between" the laser device (or laser device elements 6a) of Tada and "the pitch of the gallium nitride 103 between the SiO₂ strips 102" are "clearly different", as the Office

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Action appears to assert. It is not clear why the Office Action is comparing the ambiguous pattern that the cladding layer 107 of Tsuda somehow forms with the laser device (or laser device elements 6a) of Tada to a pitch of the gallium nitride film 103 of Tsuda. In addition, because the nature of the "pattern" is unclear, it is not clear how the Examiner concludes the pitch of the gallium nitride film 103 of Tsuda is different from that pattern.

Moreover, notwithstanding the unclear nature of the "pattern" of the cladding layer 107 of Tsuda and "between" the laser device (or laser device elements 6a) and an unclear relationship between that pattern and the pitch of the gallium nitride film 103 of Tsuda, it is not clear how that relationship is "expected to cause the second pattern to partly overlap and partly not overlap the first pattern", as the Office Action states. For example, it is not clear how some pattern of the cladding layer 107 of Tsuda and the laser device (or device elements 6a) of Tada is related to pitches of the underlying patterns formed by the masks 102, 104 of Tsuda and the films 103, 105 of Tsuda. Perhaps the Examiner is misconstruing the claims. This would appear to be the case considering the Office Action states that "Tsuda...teaches forming a semiconductor laser device which includes...layers 106, 107, 108, 109, 111, 122, and 113", which partly overlaps and partly does not overlap the gallium nitride layers 103 and 105. The claims recite a partly overlying and partly non-overlying relationship between a first pattern and a second pattern and not between elements of an upper portion (including items 106, 107, 108, 109, 111, 122, and 113) of a laser device and underlying gallium nitride layers of that device, as the Office Action describes.

Perhaps the Office Action is trying to assert that Tsuda shows or suggests the claimed differing pitches and resulting overlapping and non-overlapping nature of patterns. For example, perhaps the Office Action intends to refer to Tsuda in the places it identifies "Hayashi et al". However, any assertion that Tsuda shows or suggests the claimed differing pitches and resulting overlapping and non-overlapping nature of patterns would be erroneous for many reasons. First of all, Tsuda expressly discloses that the pitches of the masks of its various embodiments are equal, not different, including masks 102, 104 of a first embodiment (column 7, lines 40-44, and column 7, line 65, to column 8, line 4), masks 302, 303 of a third embodiment (column 9, lines 23-

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51), masks 402, 403, 404 of a fourth embodiment (column 10, lines 5-34), masks 502, 504 of a fifth embodiment (column 10, line 65, to column 11, line 19), masks 602, 606 of a seventh embodiment (column 14, line 45, to column 15, line 57), and masks 702, 704 of a ninth embodiment (column 20, line 31, to column 21, line 34). Further, numerous previous Office Actions expressly agreed that Tsuda does *not* disclose differently pitched pattern elements. See Office Action of December 23, 2005, page 4, lines 19-21; Office Action of June 14, 2005, page 4, lines 10-12; Office Action of January 10, 2005, page 4, lines 10-12; Office Action of April 7, 2004, page 6, lines 20-22; and Office Action of February 19, 2003, page 6, lines 8-10. Thus, it would be in error to assert that Tsuda discloses the claimed features. If the Office Action is trying to say that Tada provides motivation to modify Tsuda to arrive at the claimed features, it is unclear how Tada does that and the Office Action does not clarify the matter.

To establish a *prima facie* case of obviousness, three basic criteria must be met. MPEP § 2143. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Tsuda and Tada do not show or suggest the claim elements of the pitch of the first pattern and the pitch of the second pattern being different and the second pattern partly overlying and partly not overlying the first pattern due at least in part to the different pitches of the first pattern and the second pattern. Although the Office Action asserts that these features are shown by "Hayashi et al", the Applicant is not being given a fair opportunity to review the assertion because the reference is unknown to the Applicant. Accordingly, a *prima facie* case of obviousness has not been made.

Further regarding claim 4, the references, individually and in combination, fail to show or suggest a relationship between the pitch of the first pattern and the pitch of the second pattern is $0.1 \mu\text{m} < p_1 \times p_2 / |p_2 - p_1| < 5000 \mu\text{m}$, where p_1 denotes the pitch of the

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first pattern and p_2 denotes the pitch of the second pattern. The Office Action describes how a **width** of a laser element of Tada and a **pitch** of a mask of Tsuda show the claimed features. However, the claim refers to a relationship between a **pitch** of the first pattern and a **pitch** of the second pattern and not a relationship between a width and a pitch.

Further regarding claims 5 and 6, the references, individually and in combination, fail to show or suggest at least one of the first and second patterns having pattern elements arranged in a plurality of different pitches measured in the lateral direction with respect to the crystal. The Office Action states that Tsuda and Tada suggest pattern elements with different pitches because they show grooves and laser devices arranged in different positions. This statement is incorrect for many reasons. The rejection appears to state that the grooves 5 and the laser device elements 6a of Tada are being considered as the first and second pattern elements. However, another part of the same rejection (regarding claim 1, from which claims 5 and 6 depend) considers other items as the first and second patterns. See Office Action, page 2, lines 20, to page 4, line 15. Thus, the Office Action refers in error to various components of the same references as constituting the same elements of the claims.

In addition regarding claims 5 and 6, the grooves 5 and elements 6a of Tada are not first and second pattern elements as recited in claims 5 and 6. For example, the grooves 5 and laser device elements 6a, both being formed on the surface of the substrate 1, are not formed in different positions in the crystal in a direction of a thickness of the crystal, as recited in the claims (i.e., in claim 1, from which claims 5 and 6 depend). Further, the elements 6a are generally square and do not form elongate stripes, as recited in the claims (i.e., in claim 1, from which claims 5 and 6 depend). Moreover, the adjacent grooves 5 of Tada are spaced at a constant pitch and adjacent elements 6a of Tada are spaced at a constant pitch. Thus, neither the grooves 5 nor the laser device elements 6a are pattern elements arranged in a plurality of different pitches, as recited in claims 5 and 6, or suggestive of such pattern elements.

Further regarding claim 6, the references, individually and in combination, fail to show or suggest the second pattern having at least three different pitches measured in a lateral direction with respect to the crystal.

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Further regarding claims 16-20, the references, individually and in combination, fail to show or suggest forming the first pattern directly on the basal body with a base layer between and selectively etching the base layer using the first pattern as a mask. Specifically, Tsuda fails to show or suggest etching the GaN layer 101 and it would not have been obvious to one skilled in the art to selectively etch the GaN layer of Tsuda from viewing the references. The Office Action's apparent rational that accidental and unintended etching of the GaN layer may occur when etching the SiO₂ mask 102 is inaccurate because the reference clearly discloses etching away only the SiO₂ layer to form SiO₂ stripes. See column 7, lines 41-45. Because the references, individually and in combination, fail to show or suggest all of the features of claims 16-20, the rejection of these claims is improper. Accordingly, Applicant respectfully requests the rejection be withdrawn.

Further regarding claim 17, the references, individually and in any combination, fail to show or suggest forming an intermediate layer as part of the crystal on one of the surfaces of the basal body and on a surface of the base layer with the first pattern formed thereon, forming the second pattern on a surface of the intermediate layer, depositing a top layer on the surface of the intermediate layer with the second pattern formed thereon, selectively etching the intermediate layer using the second pattern as a mask, and removing the masking material of the second pattern between the second pattern formation step and the second growth step. Tsuda fails to show or suggest etching the GaN crystal film 103 and it would not have been obvious to one skilled in the art to selectively etch the film from viewing the references. The Office action's apparent rational that accidental and unintended etching of the GaN crystal film 103 may occur when etching the SiO₂ mask 104 is inaccurate because the reference clearly discloses etching away only the SiO₂ layer to form SiO₂ stripes. See column 7, line 64, to column 8, line 4. Because the references, individually and in combination, fail to show or suggest all of the features of claim 17, the rejection of this claim is improper. Accordingly, Applicant respectfully requests the rejection be withdrawn.

Further regarding claims 18 and 19, the references, individually and in any combination, fail to show or suggest forming the first pattern (claim 18) or forming the second pattern (claim 19) by forming respective indentations. The Office Action states

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that the features of claims 18 and 19 are shown because a nominal portion of the base layer (apparently the GaN layer 101 of Tsuda) will be etched when the pattern 102 is formed. However, claims 18 and 19 recite forming the pattern by forming an indentation in the basal body or the base layer. Any accidental and unintended etching of the base layer 101 of Tsuda would not result in the formation of a pattern having the required characteristics (e.g., including a plurality of longitudinal pattern elements forming elongate stripes and partly underlying and partly not underlying the second pattern).

Because the rejection of claims 1, 2, 4-6, and 11-20 fails to present a *prima facie* case of obviousness by failing to show all of the features of the claims, the rejection of claims 1, 2, 4-6, and 11-20 is improper. Accordingly, Applicant respectfully requests that the rejection of claims 1, 2, 4-6, and 11-20 be withdrawn.

Claims 8-10 and 27

Each of claims 8-10 and 27 recites a method of manufacturing a crystal of a III-V compound of a nitride system comprising forming a first pattern including a plurality of first pattern elements in a first position in the crystal in the direction of the thickness of the crystal distributed in a lateral direction with respect to the crystal and in a longitudinal direction with respect to the crystal so that a space separates each set of adjacent first pattern elements in the lateral direction and in the longitudinal direction, the first pattern having a lateral pitch measured in the lateral direction and a longitudinal pitch measured in the longitudinal direction that is substantially the same as the lateral pitch, and forming a second pattern in a second position in the crystal in the direction of the thickness of the crystal including a plurality of longitudinal pattern elements extending in the longitudinal direction and a plurality of lateral pattern elements extending in the lateral direction to intersect the longitudinal pattern elements, the intersecting elements forming a plurality of spaces between them that are aligned in the lateral direction and in the longitudinal direction, the plurality of longitudinal elements having a pitch measured in the lateral direction and the plurality of lateral elements having a pitch measured in the longitudinal direction that is substantially the same as the lateral pitch, wherein the pitches of the first pattern are different from the pitches of the second pattern and wherein the second pattern partly overlies and partly does not

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overlie the first pattern in the direction of the thickness of the crystal due at least in part to the different pitches.

Tsuda discloses a method for making a semiconductor including forming a first mask 102 and forming a second mask 104 above the first mask. Tada discloses a laser device including a plurality of electrodes 6a and a plurality of grooves 5. Tsuda and Tada, individually and in combination, fail to show or suggest forming a first pattern including a plurality of first pattern elements in a first position in the crystal in the direction of the thickness of the crystal distributed in a lateral direction with respect to the crystal and in a longitudinal direction with respect to the crystal so that a space separates each set of adjacent first pattern elements in the lateral direction and in the longitudinal direction, the first pattern having a lateral pitch measured in the lateral direction and a longitudinal pitch measured in the longitudinal direction that is substantially the same as the lateral pitch, and forming a second pattern in a second position in the crystal in the direction of the thickness of the crystal including a plurality of longitudinal pattern elements extending in the longitudinal direction and a plurality of lateral pattern elements extending in the lateral direction to intersect the longitudinal pattern elements, the intersecting elements forming a plurality of spaces between them that are aligned in the lateral direction and in the longitudinal direction, the plurality of longitudinal elements having a pitch measured in the lateral direction and the plurality of lateral elements having a pitch measured in the longitudinal direction that is substantially the same as the lateral pitch, wherein the pitches of the first pattern are different from the pitches of the second pattern and wherein the second pattern partly overlies and partly does not overlie the first pattern in the direction of the thickness of the crystal due at least in part to the different pitches.

The Office Action appears to rely on the laser device elements 6a of Tada for showing the claimed features of the first and second patterns. However, the laser device elements 6a of Tada fail to satisfy numerous characteristics of the claimed first and second patterns. For example, the laser device elements 6a of Tada are all formed at the same position measured in a thickness direction of the laser device (i.e., formed on the surface of the semiconductor 1). Thus, the laser device elements 6a of Tada cannot qualify as the plurality of first pattern elements formed in a first position in the

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crystal in the direction of the thickness of the crystal *and* as the second pattern formed in a second position in the crystal in the direction of the thickness of the crystal, as claimed. Further, each laser device element 6a of Tada is spaced from adjacent laser device elements. Thus, the laser device elements 6a of Tada do not form a second pattern including a plurality of longitudinal pattern elements extending in the longitudinal direction and a **plurality of lateral pattern elements extending in the lateral direction to intersect the longitudinal pattern elements**, as claimed. In addition, the elements 6a of Tada are not equivalent to or suggestive of a **first pattern having a lateral pitch and a longitudinal pitch that are substantially the same**. Moreover, Tada does not show or suggest a **second pattern including a plurality of longitudinal pattern elements having a pitch measured in the lateral direction and a plurality of lateral pattern elements having a pitch measured in the longitudinal direction that is substantially the same as the lateral pitch**.

Further, the laser device elements 6a of Tada do not represent a first pattern having a lateral pitch and a longitudinal pitch and a second pattern including a plurality of longitudinal pattern elements and a plurality of lateral pattern elements, wherein the plurality of longitudinal elements have a pitch measured in the lateral direction, the plurality of lateral elements have a pitch measured in the longitudinal direction, and **the pitches of the first pattern are different from the pitches of the second pattern**. Further, because the elements 6a of Tada represent a single pattern at a single position in the direction of thickness of the semiconductor device, as described above, those elements do not represent a first pattern having a lateral pitch and a longitudinal pitch and a second pattern including a plurality of longitudinal pattern elements and a plurality of lateral pattern elements, wherein the plurality of longitudinal elements have a pitch measured in the lateral direction, the plurality of lateral elements have a pitch measured in the longitudinal direction, the pitches of the first pattern are different from the pitches of the second pattern, and **the second pattern partly overlies and partly does not overlie the first pattern in the direction of the thickness of the crystal due at least in part to the different pitches**, as claimed.

Thus, as shown above, Tada does not show or suggest the features of claims 8-10 and 27. Further, the other references of record including Tsuda, individually or in

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any combination with Tada, fail to show or suggest the features of claim 8. For example, Tsuda fails to show or suggest a second pattern including a plurality of longitudinal pattern elements extending in the longitudinal direction and **a plurality of lateral pattern elements extending in the lateral direction to intersect the longitudinal pattern elements**, as claimed. Further, Tsuda fails to show or suggest a **first pattern having a lateral pitch and a longitudinal pitch or such pitches that are substantially the same**, as claimed. As an additional example, Tsuda fails to show or suggest a second pattern including a plurality of longitudinal pattern elements having a pitch measured in the lateral direction and a plurality of lateral pattern elements having a pitch measured in the longitudinal direction that is **substantially the same as the lateral pitch**. Tsuda also does not show or suggest a first pattern having a lateral pitch and a longitudinal pitch and a second pattern including a plurality of longitudinal pattern elements and a plurality of lateral pattern elements, wherein the plurality of longitudinal elements have a pitch measured in the lateral direction, the plurality of lateral elements have a pitch measured in the longitudinal direction, **the pitches of the first pattern are different from the pitches of the second pattern**, and **the second pattern partly overlies and partly does not overlie the first pattern in the direction of the thickness of the crystal due at least in part to the different pitches**, as claimed.

Further regarding claims 9 and 10, the references, individually and in combination, fail to show or suggest each first pattern element forming a rhombus having no interior right angles. In addition, the references, individually and in combination, fail to show or suggest each of the spaces formed by the elements of the second pattern being shaped as a rhombus having no interior right angles.

Further regarding claim 10, the references, individually and in combination, fail to show or suggest each of said first pattern elements and each of said spaces formed by the elements of the second pattern has a shape selected from a group of shapes consisting of parallelogram, hexagon, and triangle.

Because the references, individually and in combination, fail to show or suggest all of the features of claims 8-10 and 27, the rejection is improper. Accordingly, Applicant requests that the rejection be withdrawn.

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Claims 23, 24, and 28

Each of claims 23, 24, and 28 recites a method of manufacturing a device by forming a device film on a surface of one of a crystal substrate and a crystal film, the method comprising forming one of the crystal substrate and the crystal film by growing a crystal of a III-V compound of a nitride system having a thickness on a surface of a basal body, and forming the device film on one of the crystal substrate and the crystal film, the device film having a light-emitting portion including a cladding layer having a protrusion, a contact layer formed on the cladding layer only above the protrusion, and an electrode formed on the contact layer, wherein the growth step comprises forming a first pattern including a plurality of first elements distributed in a lateral direction with respect to the crystal in at least one pitch, the first pattern being formed in one position in the crystal in a direction of the thickness of the crystal, each of the first elements having at least one width measured in the lateral direction, and forming a second pattern including a plurality of second elements distributed in the lateral direction in at least one pitch, the second pattern being formed in another position in the crystal in the direction of the thickness of the crystal, each of the second elements having at least one width measured in the lateral direction, wherein the second pattern partly overlies and partly does not overlie the first pattern in the direction of the thickness of the crystal, and wherein the light-emitting portion overlies a region of the crystal where the second pattern overlies the first pattern so that dislocations that may form in the crystal adjacent the basal body generally do not reach the light-emitting portion.

Tsuda discloses a method for making a semiconductor including forming a first mask 102 and forming a second mask 104 above the first mask. Tada discloses a laser device including a plurality of electrodes 6a and a plurality of grooves 5. Tsuda and Tada, individually and in combination, fail to show or suggest a method of manufacturing a device by forming a device film on a surface of one of a crystal substrate and a crystal film, the method comprising forming one of the crystal substrate and the crystal film by growing a crystal of a III-V compound of a nitride system having a thickness on a surface of a basal body, and forming the device film on one of the crystal substrate and the crystal film, the device film having a light-emitting portion including a cladding layer having a protrusion, a contact layer formed on the cladding layer only

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above the protrusion, and an electrode formed on the contact layer, wherein the growth step comprises forming a first pattern including a plurality of first elements distributed in a lateral direction with respect to the crystal in at least one pitch, the first pattern being formed in one position in the crystal in a direction of the thickness of the crystal, each of the first elements having at least one width measured in the lateral direction, and forming a second pattern including a plurality of second elements distributed in the lateral direction in at least one pitch, the second pattern being formed in another position in the crystal in the direction of the thickness of the crystal, each of the second elements having at least one width measured in the lateral direction, wherein the second pattern partly overlies and partly does not overlie the first pattern in the direction of the thickness of the crystal, and wherein the light-emitting portion overlies a region of the crystal where the second pattern overlies the first pattern so that dislocations that may form in the crystal adjacent the basal body generally do not reach the light-emitting portion.

Because the references fail to disclose or suggest every feature of the claims, the rejection is improper. Accordingly, Applicant respectfully requests the rejection be withdrawn.

Claim 25

Claim 25 recites a method of manufacturing a crystal of a III-V compound of a nitride system comprising forming a first pattern in one position in the crystal in a direction of a thickness of the crystal including a plurality of first elements distributed in a lateral direction with respect to the crystal at a pitch, each of the first elements forming an elongate stripe extending in a longitudinal direction that is substantially orthogonal to the lateral direction and each of the first elements having at least one width measured in the lateral direction, and forming a second pattern in another position in the crystal in the direction of the thickness of the crystal, the second pattern including a plurality of second elements distributed in the lateral direction with respect to the crystal at a pitch, each of the second elements forming an elongate stripe extending in the longitudinal direction and each of the second elements having at least one width measured in the lateral direction, wherein the width measured in the lateral direction of at least one of the first pattern elements is different than the width measured in the lateral direction of at

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least one of the second pattern elements, and wherein the second pattern partly overlies and partly does not overlie the first pattern in the direction of the thickness of the crystal due at least in part to the different widths.

Tsuda discloses a method for making a semiconductor including forming a first mask 102 and forming a second mask 104 above the first mask. Tada discloses a laser device including a plurality of electrodes 6a and a plurality of grooves 5. Tsuda and Tada, individually and in combination, fail to show or suggest forming a first pattern including a plurality of first elements, each of the first elements having at least one width measured in the lateral direction, and forming a second pattern including a plurality of second elements, each of the second elements having at least one width measured in the lateral direction, wherein the width measured in the lateral direction of at least one of the first pattern elements is different than the width measured in the lateral direction of at least one of the second pattern elements and **the second pattern partly overlies and partly does not overlie the first pattern in the direction of the thickness of the crystal due at least in part to the different widths.**

Tsuda discloses a plurality of first elements 102, each having a width of 7 μm (column 7, lines 38-44) and a plurality of second elements 104 partly overlying and partly not overlying the first elements, wherein each second element has a width of 8 μm (column 7, line 64, to column 8, line 4). However, because the pitches of the first and second elements 102, 104 of Tsuda are the same, the overlying and non-overlying of the second elements with respect to the first elements is due to alignment of the second elements over the first elements and not due to the different widths. Regarding that alignment, Tsuda expressly states that "it is important that the position of the second mask is matched with the openings in the first mask". The non-overlying of the second mask with respect to the first mask is due to the particular alignment of the masks having the same pitch and not due to the different widths of the masks. For example, even if the widths of the first and second elements 102, 104 were the same (e.g., the width of each first element 102 and each second element 104 was 8 μm), the second pattern elements would still partly overlie and partly not overlie the first element because of the particular alignment of the second mask with the openings of the first

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mask. Because the references, individually and in combination, fail to show or suggest all of the features of claim 25, the rejection is improper and should be withdrawn.

Because the Office Action fails to present a *prima facie* case of obviousness and the references, individually or in combination, fail to show every feature of claims 1, 2, 4-6, 8-20, 23-25, 27, and 28, the rejection is improper. Further, the rejection is improper because it relies on an unknown reference as described above. Accordingly, Applicant respectfully requests that the rejection of claims 1, 2, 4-6, 8-20, 23-25, 27, and 28 be withdrawn and that a non-final Office Action or a Notice of Allowance be issued.

Conclusion

As it is believed that the application is in condition for allowance, a favorable action and a Notice of Allowance are respectfully requested.

If the Examiner desires, Applicant welcomes a telephone interview to expedite prosecution. As always, the Examiner is free to call the undersigned at 314-259-5909. Applicant believes there is no fee due at this time. However, the Commissioner is hereby authorized to deduct any applicable fees from Deposit Account No. 19-3140.

Respectfully submitted,

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